



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

finer to the emotions, the movements of the hands or arms are often modified or accentuated by associated facial changes. These infuse life into the skeleton sign and belong to the class of innate expressions. . . . Emotional expression in the features of man is to be considered in reference to the fact that the special senses either have their seat in or in close relation to the face, and that so large a number of nerves pass to it from the brain." He describes several instances where complete conversation has been carried on by facial expression alone, showing the possibilities of intellectual as well as of emotional expression of the face.

Facial expression differs from sign language in that the latter, like oral speech, has become conventional among tribes by whom it is extensively employed; but the former still bears its primitive graphic and representative relations to thought and feeling. It pictures feeling, illustrates thought, and is, therefore, the remains of the original, primitive sign language, which was pictographic. Sign language and its analogue, facial expression, "are so faithful to nature that they will endure, while vocal speech will undergo many vicissitudes of development and retrogression." Being among the earliest evolved expressional habits, facial expression will be among the last to change, while oral speech and our sign language will become conventionalized, and undergo many changes, so as to lose all resemblance to idiographic signs. Facial expression is part of the natural sign language, and consists largely of hereditary impulses left over from a primitive state. So the signs given by the features, indicative of what is going on within the mind, are direct and simple. Even children—babies—notice the expressions of the face, and judge of the intentions of persons toward them. The power to read signs is of course an hereditary instinct, just as the sign language of the face is hereditary. Both came down from an epoch in the evolution of the race when articulate speech was undeveloped and even gesture language was unconventionalized.

NOTES ON THE CORN-ROOT WORM.

(*Diabrotica longicornis* Say.)

BY S. J. HUNTER, WAVERLY, KAS.

This corn pest has been known in the State for 10 years. The following notes, comprising my observations of this year on the workings of the pest in a single locality, reveal the very considerable damage which may be done by the pest. If the corn-growing region of the State were generally so badly infested, the loss would be enormous.

My observations were made in the northeast corner of Anderson county. The pest was first noticed in the neighborhood three years ago, on a farm bordering on Franklin county. Mr. Guard, the owner of the farm, stated that the insects have been increasing each year, so that this year his corn will not average more than one-third of a crop. One-half mile south of this farm there is a ridge of high prairie land four miles long, running east and west. On the west end of this ridge Mr. Stidham owns a farm. Mr. Stidham said he had not noticed the pest in his corn until this year. About the middle of June the corn on 30 acres of his land stopped growing and began to turn lighter in color. Upon examination, he found a worm at work at the roots, cutting each of the roots off at about two inches from the stalk. The "bite," he said, in every case seemed to poison the rootlet so that a kind of tubercle formed on the end, and no further growth took place from the rootlet. The worm he described as white, very short and slender when young, but when grown it was

one-half an inch long and of yellowish color. This piece of ground he had planted in corn for five years consecutively. He thought the worm had destroyed two-thirds of the crop. Mr. Stidham did not know the life history of the worm, but, from the great number of little green beetles in his corn, concluded they were the parents of the worm.

A short distance to the east, on the same ridge, Mr. J. L. Garrett had 12 acres attacked. This piece, according to his estimate, will not average two bushels to the acre. A piece of corn near by, not badly infested, will yield 25 bushels per acre. Mr. Grandin, another resident of the ridge, had 15 acres so badly damaged by the pest that the field, on the 1st of September, looked as it might after a heavy hail storm. Very few stalks could be found standing firmly in the ground. Mr. Grandin thought he would not obtain one-third of a crop.

These are the worst cases along this ridge, but every farm along the ridge has the insect in its soil. Some of the farmers said the pest destroyed an acre; others that they had noticed it in their corn, but not in great numbers.

About 1½ miles southwest of this, a 30-acre piece of corn was similarly attacked. This ground is bottom land, has raised corn five years consecutively, and has until this year produced about the best corn in this locality. It will not yield this year two-thirds of a crop. One-half mile southwest of this, Mr. Olendorf has 14 acres of corn which has been about half destroyed by the pest. Mr. Olendorf is the only man in the neighborhood who has had previous experience with the insect. He stated that nine years ago they destroyed about two-thirds of the corn crop of Carroll county, Missouri. He said they could not seriously damage corn planted in ground for the first time after some other crop; that corn must be planted from three to five years consecutively before they could work effectively.

On 35 acres of corn near by, the writer had an opportunity to watch the working of this insect from the first of August until the first of October. After the corn was "laid by" it grew quite unevenly. Just as the tassels appeared above the top leaves of the stalk, numbers of grass-green beetles, about four-tenths of an inch long, head and prothorax reddish brown, began to enter the tassels. Here they fed upon the pollen, knocking it down into the sheath of leaves around the tassel. The mass caused decay around the base of the tassel, and, in some cases, killed the tassel before it had grown to its full height. Twelve of the beetles were frequently found in one tassel. Stalks containing that number could generally be lifted out of the ground with the finger and thumb. All the corn examined was drilled corn, so that it can be inferred that the insect ascends the stalk on whose roots it has fed when in the larval state.

After the pollen has gone, the insects can be found between the husks of the ear, and also between the green leaves and the stalk. They are very active, and seek flight upon the slightest disturbance. In flight, they resemble a particle from the tassel, or a small piece of corn leaf; so that one might examine a stalk with several insects on it and, unless they were seen before taking wing, might suppose there were no bugs on the stalk.

From observation and reports from farmers, the following may be said: The insect probably passes the winter in the egg laid in the field the previous fall, hatches out about the middle of May, in the form of a white worm, one-quarter of an inch long and as thick as a pin. In this form it fastens itself to a corn rootlet, cutting it off, then continues to encircle the stalk until all the rootlets are cut or until it has become full fed. At this stage it is about one-half inch long, and yellowish white. Now it becomes a pupa, and appears at tasseling time as a grass-green or yellowish-green beetle, ready to feed upon the pollen. Thus it is destructive to both the root and the top of the corn. It works best in ground which has produced corn for sev-

eral years in succession. It is more destructive on high prairie land than low land, in dry seasons than in wet seasons. On the bottom farms mentioned, the damage was in spots where the soil was exceptionally loose. No artificial remedies have been used in this vicinity.

ON THE HORSE FLIES OF NEW MEXICO AND ARIZONA.

BY C. H. TYLER TOWNSEND, NEW MEXICO AGRICULTURAL COLLEGE, LAS CRUCES, N. M.

Horse flies rarely occur on the higher lands or mesas of New Mexico and Arizona, so far as my experience goes, unless in proximity to some swale, spring, or body of water. They are met with in valleys of rivers and streams, and some species occur very abundantly in the neighborhood of isolated swales or marshy places filled with a growth of tall grass or various plants. Such swales occur at long distances from each other in some parts of this region, as in eastern-central Arizona, and may or may not be situated near to a creek or spring. They are usually filled with the carcasses of dead cattle, which have been unfortunate enough to get mired in them, and in such cases yield a most offensive odor.

This distribution of the horse flies is the result of the nature of the country, where water holes and springs are few and far between. It is quite possible that most of the species breed in these swales, but doubtless the prime reason for their occurrence near water is because the animals whose blood they suck are to be found there only.

The following species have been collected by the writer in this region:

Chrysops fulvaster O. S. ♂ ♀

Silvius quadrivittatus Say. ♂ ♀

Apatolestes comastes Will. ♀

Diachlorus guttatus n. sp. ♀

Tabanus punctifer O. S. ♂ ♀

Tabanus lineola Fab. ♂ ♀

? *Tabanus vivax* O. S. ♀

Below are given notes and descriptions of the species:

Chrysops fulvaster Osten Sacken.—Seven ♀ specimens and one ♂ from G bar ranch, Zuni river, Arizona, July 27 (Apache county). One ♀ from Pescado, N. M., July 31 (Valencia county). One ♀ from Springerville, Ariz., June 24 (Apache county). Seven ♀♀ from Seneca ranch, north of Springerville, Ariz., June 25 (Apache county). Most of my ♀ specimens are 8 mm. in length; the one ♂ is 7 mm. In the ♂ the "subhyaline elongated spot at the distal end of both basal cells," mentioned in Osten Sacken's description, extends into and occupies the central third of the anal cell. There is also present the subhyaline spot in the middle of the fifth posterior cell, as in the ♀; and the crescent-shaped space toward the apex of the wings, mentioned by Osten Sacken, also present in the ♀. The discal cell is faintly subhyaline in its central portion. With these exceptions, the wing of the ♂ is wholly blackish, if we except a minute subhyaline spot in the extreme proximal end of the first basal cell. Osten Sacken does not mention the antennæ, which are wholly black in the ♂, but blackish with the first joint fulvous or reddish in the ♀. Williston has noticed the swollen first antennal joint, peculiar to this species (Trans. Kas. Acad. Sci., vol. X, p. 134). This species is very annoying to man and horses. It was found very abundantly at a slough near the Seneca ranch, about a half mile south; the slough grassy, and full of reeds and dead cattle. The flies were very bloodthirsty. One was found piercing one of the leather girth straps of my saddle, and another at-